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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,171	03/19/2004	Sung Hea Cho	1594.1416	6773

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EXAMINER	
DUFF, DOUGLAS J	
ART UNIT	**PAPER NUMBER**
3748	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/804,171	CHO ET AL.	
	Examiner	Art Unit	
	DOUGLAS J. DUFF	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 November 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

This Office action is in response to Applicant's amendments filed 11/26/07.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2 and 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujio (US 5322424) in view of Hix et al. (US 20030143083). Regarding claim 1, Fujio discloses a variable capacity rotary compressor comprising a housing with first and second compressing chambers having different volumes (Fig. 18, 7a, 9a), a rotating shaft adapted to rotate in the first and second compressing chambers (Fig. 18, 6), the motor being variable in rotating speed in accordance with an electrical control operation (col. 16, lines 13-21). Fujio fails to disclose a compressing unit arranged in the compressing chambers adapted to perform a compression operation in a selected one of the first and second compressing chambers in accordance with a change of a rotating direction of the shaft a drive motor adapted to rotate the shaft in a first direction or in a second direction, and to perform an idle operation in the other of the first and second compressing chambers.

3. Hix et al. teaches a variable capacity compressor where a compressing unit (120) is arranged in the compressing chambers (144, 146) adapted to perform a compression operation in a selected one of the first and second compressing chambers

in accordance with a change of a rotating direction of the shaft a drive motor adapted to rotate the shaft in a first direction or in a second direction (paragraphs 0002, 0003), and to perform an idle operation (shorter stroke S, Fig. 4) in the other of the first and second compressing chambers (chambers separated by 140, Fig. 7). It would have been obvious for a person having ordinary skill in the art at the time the invention was made to utilize a compressor adapted to perform compression in one of the compression chambers in accordance with a change in rotating direction of the shaft in order to provide a very cost-effective way to achieve capacity modulation and extreme efficiency (paragraph 0003, lines 18-20).

4. Regarding claim 2, the modified Fujio device discloses the invention as described in claim 1 and further discloses first and second sleeves (7b, 9b) respectively arranged in the first and second compressing chambers (Fig. 19); first and second eccentric units mounted on the rotating shaft (6a, 6b), and adapted to operate in opposite manners such that one of the first and second eccentric units selectively rotates an associated one of the first and second sleeves in an eccentric state in accordance with the rotating direction change of the rotating shaft (Figs. 18, 19), thereby causing the associated sleeve to perform the compression operation in the selected one of the first and second compressing chambers (Hix, Fig. 7), while the other eccentric unit idly rotates the other sleeve associated therewith in the other compressing chamber associated therewith during the compression operation caused by the one eccentric unit (Hix et al., disengagement-type compressor, paragraph 0003); and first and second vanes (38, 39)

respectively arranged in the first and second compressing chambers to be radially movable between extended positions thereof and retracted positions thereof (Fig. 22).

5. Regarding claims 5-10, the modified Fujio device discloses the invention as described in claim 2 and further discloses the first eccentric unit comprises a first eccentric cam (6b) fixedly fitted around an outer surface of the rotating shaft in the first compressing chamber, and a first eccentric bush (9a) rotatably fitted around an outer surface of the first eccentric cam; the second eccentric unit comprises a second eccentric cam (6a) fixedly fitted around the outer surface of the rotating shaft in the second compressing chamber, and a second eccentric bush (7b) rotatably fitted around an outer surface of the second eccentric cam; and the compressing unit further comprises a locking unit (Hix et al., Fig. 5) adapted to lock the first and second eccentric bushes in opposite states in accordance with the rotating direction change of the rotating shaft such that one of the first and second eccentric bushes is locked in an eccentric state, while the other eccentric bush is locked in an eccentricity-released state, a cylindrical connecting member adapted to connect the first and second eccentric bushes such that the first and second eccentric bushes have opposite eccentric directions (Fig. 4, 58); and the locking unit comprises a locking slot (70) provided at the connecting member to extend circumferentially, and a locking pin (74) extending radially through the locking slot to be coupled to the rotating shaft such that the locking pin is engagable with the locking slot (Fig. 4), the first vane is arranged between suction (right of 39) and discharge ports (left of 39) of the first compressing chamber to be radially movable between an extended position thereof and a retracted

position thereof while being in contact with an outer surface of the first sleeve (Fujio, Fig. 22); and the second vane is arranged between suction and discharge ports of the second compressing chamber to be radially movable between an extended position thereof and a retracted position thereof while being in contact with an outer surface of the second sleeve (Fig. 19).

6. Claims 3, 4, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujio in view of Hix et al. as applied to claims 1, 2 and 5-10 above, and further in view of Weber (US 5780990). The modified Fujio device discloses the compressor as described in the rejection of claims 3 and 8 above, but fails to disclose the motor being a brushless DC motor and being an inverter motor.

7. Weber teaches a variable capacity compressor with a drive motor being a DC brushless motor (col. 9, line 37) and an inverter motor (290). It would have been obvious for a person having ordinary skill in the art at the time the invention was made to utilize a drive motor for a variable capacity compressor being a DC brushless or inverter motor in order to provide a drive motor that is more compact and with reduced mass, operating more quietly and efficiently (col. 9, lines 15-18).

Response to Arguments

8. Applicant's arguments filed 11/26/07 have been fully considered but they are not persuasive. Applicant's claimed invention relies on the term "idle" to limit the operation of the first or second compressing chambers. Hix discloses a compressor with one of two compressing elements that idles (i.e. operates in a reduced work state) when run in a reverse direction (col. 2, lines 26-57). As a clear example, the Examiner points to

torque converters which are well known to greatly reduce their amount of work when entering into an idle state, but still pump a small amount of fluid. The pump of Hix performs an idle operation when it is run in reverse by reducing its pumping capacity.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DOUGLAS J. DUFF whose telephone number is (571)272-3459. The examiner can normally be reached on M-Th 7 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Douglas J Duff/
Examiner, Art Unit 3748
2/28/08
/Thomas E. Denion/
Supervisory Patent Examiner, Art Unit 3748